

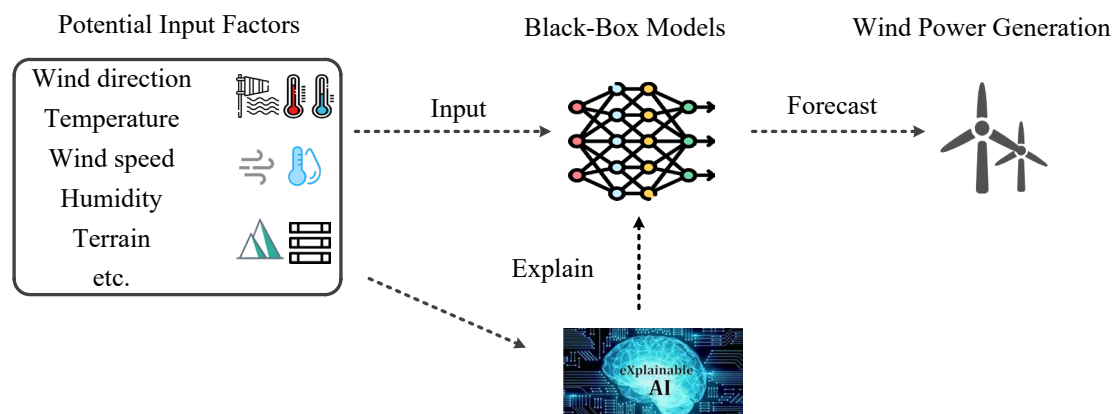
Position for Master Thesis Project

Wind Power Forecasting Using Explainable Artificial Intelligence

In recent years, artificial intelligence has made great progress in wind power forecasting. In particular, neural networks have reached state-of-the-art performance. However, these neural networks are usually considered as black-box models that lack interpretability, making it difficult for operators to judge the credibility of forecasting results. Interpretability, in this context, refers to the ability to understand the contribution of individual features within the model.

As part of this project, the goal is to develop and apply explainable artificial intelligence (XAI) techniques to wind power forecasting. You will collaborate with Dr. Wenlong Liao (wenlong.liao@epfl.ch) to accomplish the following two tasks:

- 1) Propose novel black-box models for wind power forecasting.
- 2) Develop a model-agnostic framework (e.g., SHAP) to provide explanations for these black-box models.



We offer you:

- 1) Guidance in implementing XAI techniques for wind power forecasting.
- 2) Provision of wind power datasets and benchmarks.

Your qualities:

- 1) Excellent programming skills in Python.
- 2) Demonstrable interest in machine learning.
- 3) Familiarity with deep learning frameworks, such as TensorFlow (optional) and PyTorch (optional).

Expected Outcomes:

- 1) A strong understanding of wind power forecasting and XAI techniques.
- 2) Development of academic and technical writing skills.
- 3) Submission of a paper to an international journal.

For more information about the project and to be considered the position, please contact:

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